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28 January 2015

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
Comprehensive Review of Licensing and) IB Docket No. 12-267
Operating Rules for Satellite Services)

To: The Commission

Comments of AvL Technologies, Inc.

AvL Technologies, Inc., ("AvL") respectfully requests that the commission consider the following comments in the rulemaking matter described above (IB Docket No. 12-267).

AvL is a U.S.-based company with more than 20-years of experience in the business of designing and manufacturing transportable satellite antenna systems for use in VSAT earth stations. Our company introduced the zero-backlash cable drive and the one-button satellite auto-acquisition technologies that are now ubiquitous in the industry. To date, we have delivered over 20,000 transportable antenna systems worldwide, with most of them operating over fixed-satellite service (FSS) networks in the C, Ku and Ka frequency bands. AvL has also been an active participant in the FCC rulemaking process for many years and looks forward to continuing in that role for many more.

Paragraph 63

AvL applauds the change to angular percentages in calculating the amount of energy above the off-axis antenna gain envelope. In addition, making allowances for main reflector spillover energy in the plane perpendicular to the GSO arc in the manner described achieves reasonable equivalence to the previous "single lobe" method and is equally endorsed. Given measurement requirements for the elevation plane spelled out elsewhere in the referenced document (e.g. Paragraph 102) it is unlikely that this particular allowance would ever be applied except in special circumstances. We believe the Commission should consider making the same 6 dB allowance for main reflector spillover energy in the plane of the GSO arc. Main reflector spillover energy is present in all planes passing through the main beam axis and an appropriate allowance for this energy should be made when evaluating antenna performance in all specified planes.



Paragraph 80

AvL supports allowing applicants to certify compliance against the off-axis antenna gain standards of 25.209 instead of submitting antenna patterns for Commission review and analysis as part of the licensing process. However, we highly recommend that any certification made in this regard be signed-off by the principal RF person or a senior officer of the company (e.g. CTO or CEO) making an application for a license under these rules and submitted to the FCC to be held on file. We believe the act of submitting a certification signed by a senior officer or high technology person will assure to the FCC of unquestioned compliance by the antenna manufacturer.

In addition to a certification document, we recommend the antenna manufacturer submit a general radiated power envelope similar to those previously required for C-band antennas and used to perform interference studies for terrestrial microwave antennas. Please see Figure 1 for an example of one of those power envelopes. By including such an envelope, the applicant confirms his understanding of the applicable antenna performance requirements in a manner that is easily verified. This information can also be used by the applicant to justify a request to operate the antenna at higher input power density, provided their power envelope shows the requisite margin. Providing this opportunity as part of the certification process makes it easier for industry to realize the benefits of reduced aperture size for a particular situation resulting in reduced cost for the network operator.

We do not consider this power envelope requirement to put an undue burden on the manufacturer. Sidelobe peak and angular placement vary with frequency and every antenna has a unique surface contour that produces different sidelobe peak levels and angular placements. A properly defined set of radiation pattern data collected on a single antenna can be used to represent general performance of the antenna design.

Furthermore, we believe there is significant utility in having the applicant place a copy of relevant antenna patterns on file with the Commission such that they are readily available should they be needed for audit or other purposes.

Paragraph 81

AvL recommends that the minimum equivalent antenna diameter for routine licensing in the 20/30 GHz band be set at 60cm. Section 25.212 states that an earth station with a minimum antenna equivalent diameter of 1.2 meters may be routinely licensed for narrowband analog services in the 14.0 – 14.5 GHz band. The lowest transmit frequency in the two bands are 28.3 GHz (Ka) and 14.0 GHz (Ku). The ratio of these two frequencies is slightly greater than 2.0, which means the equivalent Ka antenna should have a minimum equivalent diameter one-half that of the Ku antenna. This is consistent with AvL's design and antenna test range experience. We recently successfully completed Eutelsat-witnessed type approval testing performed on three (3) 60cm offset antennas that all passed the Commission's off-axis



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antenna envelope requirements with margin proving that a well designed and manufactured 60cm antenna is capable of meeting requirements for routine licensing.

Paragraph 86

AvL is skeptical of SIA's suggestion that an applicant's certifying a 50 dBW EIRP limit and operation in compliance with applicable Commission rules is sufficient for licensing purposes. The absence of any explicit mention of density limits in association with the stated EIRP limit is worrisome. While 50 dBW is a relatively low EIRP value for a Ku or Ka earth station, the EIRP density generated by such an antenna system can be quite high and should be subject to routine control.

Paragraph 103

AvL agrees that antenna gain pattern performance is well characterized by measurements at only the lowest and highest frequencies in the assigned operating band. Antenna pattern performance relative to the specified off-axis envelope does not typically change significantly over the operating band when compared to performance at the band edges. However, there is some value in including additional intermediate measurement frequencies when calculating an EIRP density or interference protection envelope based on measured uplink and downlink antenna patterns. Sidelobe peak locations change rapidly with frequency, particularly at angles relatively far away from the main beam. Superimposing measurements of the same antenna at several frequencies is preferable to coarse interpolation between as few as two measured antenna patterns. Modern antenna test ranges routinely measure multiple frequencies "on the fly" and mandating that measurements at intermediate frequencies be made available to, or be placed on file with, the Commission should not impose an undue burden on the satellite services industry.

Paragraph 164

AvL concurs with the Commission's plan to amend the rule and allow unlicensed receive-only terminals to receive signals from satellite stations that are not on the Permitted Satellites List, but have been approved to access the U. S. market under Section 25.137. Doing so does nothing to weaken the regulatory regime and will benefit AvL (and others) by facilitating receive-only product acceptance testing of new and refurbished antenna systems using satellites that would have previously required a license (e.g. O3b Networks MEO satellites). We are sure other U. S. based antenna design and manufacturing companies will benefit in similar ways due to this rule change.

Paragraph 170

Similar to our comment regarding Paragraph (80) above, AvL recommends that the Commission consider allowing applicants to place measured receive antenna patterns on file at your facility to assure prompt processing of any interference protection requests that may arise in the future. We plan to



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continue measuring a complete set of antenna patterns, transmit and receive, for all of our products and making them available to our customers to facilitate licensing of their terminals with all applicable regulatory agencies. Making that data available to our customers is viewed as a requirement by AvL for our standard products and should not be a hardship for any reputable producer of satellite antenna systems.

AvL appreciates the opportunity to comment on these proceedings and your kind attention in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Westall", written over a horizontal line.

Ken Westall
Director of Programs
AvL Technologies, Inc.



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Antenna Manufacturer XYZ

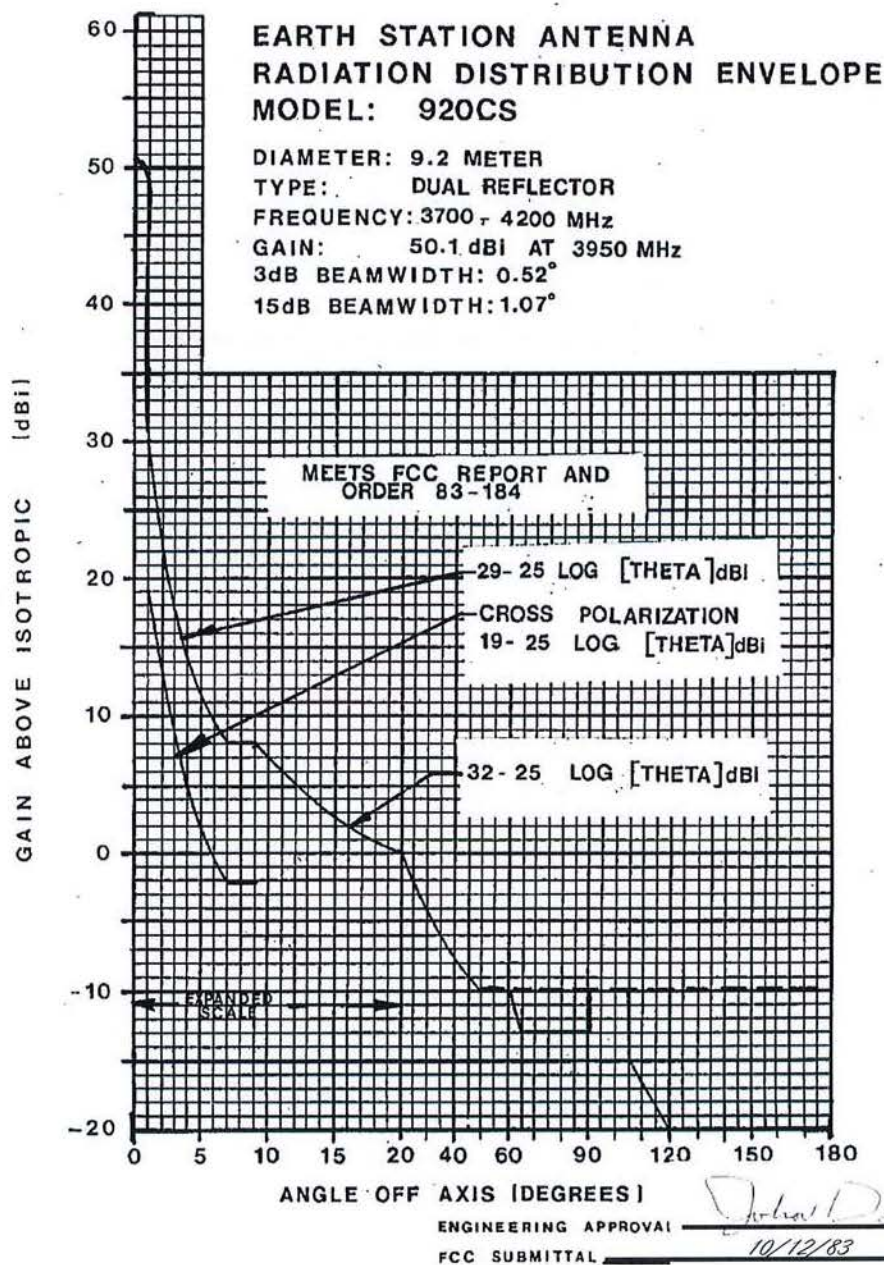


Figure 1: General Radiated Power Envelope Example